



for the Improvement of Mine Safety and Health, Inc.

The Alpha Foundation is pleased to present its 2018 Annual Report.

The report provides a summary of activities directed toward the realization of the Foundation's mission to improve mine health and safety through funding research and development projects by qualified academic institutions and other not-for-profit organizations.

### **Grantmaking Summary**

Since its beginning in 2011, the Alpha Foundation has supported a portfolio of research that comprises 75 projects awarded to 33 institutions with total funding of approximately \$30 million. These grants address the four major focus areas of the Foundation, specifically:

- Safety and Health Interventions
- Mine Escape, Rescue & Training
- Safety & Health Management & Training
- Injury & Disease Exposure & Risk Factors

In 2018, the Foundation made grants through one major solicitation as well as through the funding of follow-on grants, and also issued a new major solicitation for projects that will be funded starting in 2019 as described below.

### **AFC719, Exploratory Projects on Targeted Topics in Mining Safety and Health Research**

The purpose of this solicitation was to identify exploratory projects that could address targeted topics identified by the Alpha Foundation for research attention. Thirteen projects covering eight priority topics were selected from 44 submitted proposals. The topical areas covered by this newly funded research were:

- Understanding the Role of Overburden Mechanics in Pillar Design and Global Ground Stability
- Evaluation of Current Seal Design Criteria
- Innovative Methods of Methane Detection Near the Face and De-energizing the Longwall Equipment
- Proof-of-Concept Development of Explosion Permissible Sensory or Robotic Equipment
- Using Refuge Alternatives as a Base of Operations
- Examination of the Relationships between Mine Environment Exposures and the Development or Exacerbation of Asthma and COPD

- Identification of Mining Jobs and Operations with High Rates of Work-related Musculoskeletal Disorders (WMSD), including the Evaluation of the Effectiveness of Measures Intended to Reduce or Prevent These Disorders
- Assessing Noise Exposures, Hearing, and Risk of Injuries Among Miners

One of the objectives of this solicitation was to engage new research teams in Alpha Foundation projects. Twelve new Principal Investigators and five organizations that had not previously received Alpha Foundation grants are represented in the group that was funded.

### Follow-on Grants

Many projects that have received Alpha Foundation funding are now complete, and a number of these completed projects identified compelling additional research work that could build upon the initial results. The Alpha Foundation Directors and technical staff have invited selected Principal Investigators to submit proposals for follow-on projects which have been thoroughly reviewed and funded as warranted. During 2018, the following seven follow-on projects have been funded:

- Advanced Low Noise Fan Array System
- Numerical Analysis of Gas Explosions in Coal Mines
- Investigating the Impact of Rock Rubble on Methane-Air Explosions: High-speed Turbulent Deflagrations and Transition to Detonations
- Validation of the Gas and Dust Explosion Model
- Proof-of-Concept Work to Demonstrate Optical Microscopy with Image Analysis as a Tool for Semi-Continuous Coal Mine Dust Monitoring
- Early-Warning System Prototype Tests for Real-Time Safety Intervention and Optimum Ventilation Control Assistance
- Coal Mining Employment as a Risk Factor for Rheumatoid Arthritis

Additional follow-on grants are anticipated in the coming year as projects from earlier solicitations conclude, especially those from the AFC518 and AFC618 solicitations that were explicitly designed to be shorter term proof-of-concept projects with an opportunity for second phase funding for those showing promise.

A complete description of the Foundation's grant portfolio can be found at [www.alpha-foundation.org](http://www.alpha-foundation.org).

### AFC820, Projects in Mining Safety and Health Research

In 2018, a new open solicitation was issued for proposals that address any of the topics and priority areas that have been identified by the Alpha Foundation as well as other prospective projects that address the Foundation's mission. The Foundation is allocating \$7.5 million for projects of a maximum duration of 36 months that will result from this solicitation. Proposals are due on March 8, 2019 and awards are expected in the early Fall of 2019.

## **Communicating Project Outputs**

An important element of the Foundation’s vision to “enable miners in the future to be free of work-related injury or disease” is to promote implementation of all appropriate results from the projects that have been supported. The Foundation encourages grantees to engage with all stakeholders in the course of the project execution, as well as to make the results available openly to the community through presentations and publications. The Foundation’s website at [www.alpha-foundation.org](http://www.alpha-foundation.org) provides for outcomes from completed projects in the form of Final Technical Reports, as well as a selection of publications and presentations. In addition, all Foundation researchers are encouraged to publish results in well-recognized and respected journals and also to present research in major national and international meetings. Finally, the Foundation also continues to encourage strong linkages between grantees and the broad mining industry, including all stakeholder communities.

## **Administrative Support Changes**

Current Executive Director and Grants Manager Dr. Warren Hunt will be retiring from these roles at the end of 2018. Dr. Hunt was the Foundation’s second Executive Director, following Dr. David Belden, who was instrumental in the early stages of the Foundation’s life. Under Dr. Hunt’s leadership, the Foundation established streamlined processes for grantmaking and administrative processes with significant assistance from Glenmede and the Alpha Foundation technical staff. Dr. Hunt also ensured that the administration and management of the Foundation was efficient and effective. The Directors, Technical staff, and Glenmede express their appreciation to Dr. Hunt, praise his commitment to fulfilling the mission and goals of the Foundation, and wish him a joyful and healthy retirement.

The Foundation is pleased to announce that, effective Jan. 1, 2019, the responsibilities of Executive Director and Grants Manager for safety-related projects will be assumed by Dr. Thomas Barczak, who will continue to serve as Technical Director as well. The Grants Manager responsibilities for health-related projects will be assumed by Dr. Michael Silverstein, who will also continue in the role of Technical Associate.

## **Alpha Foundation Board of Directors**

Dr. Michael Karmis, Director and President

Dr. Keith Heasley, Director and Secretary

Dr. David Wegman, Director and Treasurer

## **Alpha Foundation Staff**

Dr. Thomas Barczak, Technical Director

Dr. Michael Silverstein, Technical Associate

Dr. Warren Hunt, Executive Director and Grants Manager